What is claimed is:

- 1 1. A solder-coated article comprising:
- 2 a dielectric core having a largest dimension ranging from 1 to 1000 microns;
- 3 a solderable metal layer over said core; and
- 4 a solder layer over said metal layer



- 2. The solder-coated article of claim 1, wherein said core is a ceramic core.
- 1 3. The solder-coated article of claim 1, wherein said core is a glass core.
- 4. The solder-coated article of claim/1, wherein said core is a spherical core.
- 5. The solder-coated article of claim 4, wherein said core ranges from 25 to 200
- 2 microns in diameter.
- 1 6. The solder-coated article of claim 1, wherein said solderable metal layer is selected
- 2 from copper and nickel.
- 7. The solder-coated article of claim 1, wherein said solder is selected from (a) a solder
- 2 comprising lead and tin and (b) a solder comprising lead and indium.
- 1 8. The solder-coated article of claim 7, wherein said solder layer is selected from a
- 2 63%Sn/37%Pb solder, a 95%Pb/5%Sn solder, and a 50%Pb/50%In solder.
 - 9. A modified substrate comprising:
- 2 a substrate;

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a metalized pad on said substrate; and

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- a bump feature on said metalized pad, said bump feature comprising a dielectric 1 2 core; a solderable metal layer over said core; and a solder region contacting at least a 3
 - portion of said solderable metal layer and at least a portion of said metalized pad.



- 10. The modified substrate of claim 9, wherein said substrate is a semiconductor substrate.
- 11. The modified substrate of claim 9, wherein said substrate is a ceramic substrate. 1
- 12. The modified substrate of claim 9, wherein said substrate is a printed circuit. 1
- 13. The modified substrate of claim 12, wherein said printed circuit is selected from a 1
- 2 printed circuit board and a flexible circuit.
- 14. The modified substrate of claim 9, wherein said core is a ceramic core. 1
- 15. The modified substrate of claim 9, wherein said core is a glass core. 1
- 16. A solder bonded assembly comprising: 1
- 2 a first substrate comprising a first solder pad;
- a second substrate comprising a second solder pad; 3
- a dielectric core provided with a solderable metal layer and disposed between 4
- 5 said first and second solder pads; and
 - a solder region covering at least a portion of each of (a) said first solder pad, (b) said second solder pad and (c) said solderable metal layer.

 - 17. The solder bonded assembly of claim 16, wherein said first and second substrates
- are selected from the group consisting of a semiconductor substrate, a ceramic
- 3 substrate and a printed circuit.



- 1 18. The solder bonded assembly of claim 16, wherein said first substrate is a
- 2 semiconductor substrate and said second substrate is a printed circuit.
- 1 19. The solder bonded assembly of claim 16, wherein said core is a ceramic core.
- 1 20. The solder bonded assembly of claim 16, wherein said core is a glass core.
- 1 21. A method of providing a modified substrate comprising:
- 2 providing a substrate comprising one or more solder pads; and
- providing one or more bump features on said one or more solder pads, each said
- 4 bump feature comprising: (a) a dielectric core; (b) a solderable metal layer over said
- 5 core; and (c) a solder region covering at least a portion of said solderable metal layer
- 6 and at least a portion of said solder pad.
- 1 22. The method of claim 21, wherein said bump feature is provided by a method
- 2 comprising:
- providing one or more solder-coated articles comprising: (a) a dielectric core,
- 4 (b) a solderable metal layer over said core, and (c) a solder layer over said metal layer;
- 5 placing said one or more solder coated articles on said one or more solder pads;
- 6 and
- 7 applying sufficient heat to melt said solder layer.
- 1 23. The method of claim 21, wherein said dielectric core is a spherical dielectric core
- and wherein said one or more solder-coated articles are placed on said one or more
- 3 solder pads by a method comprising:
- 4 providing a pick-up assembly complising a block with one or more holes in
- 5 communication with a vacuum, said one or more holes arranged in a configuration that
- 6 corresponds to positions of said one or more solder pads;

1	placing said pick-up assembly into contact with a group of said solder-coated
2	articles;
3	applying a vacuum such that each of said one or more holes is filled with a
4	solder-coated article;
5	aligning said one or more solder-coaled articles with said one or more solder
6	pads; and
7	discontinuing said vacuum such that said one or more solder-coated articles are
8	released on said one or more solder pads.

